

Navy & Industry R&D Partnership Conference 2004

Corrosion Prevention and Control and Sea Basing

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Outline

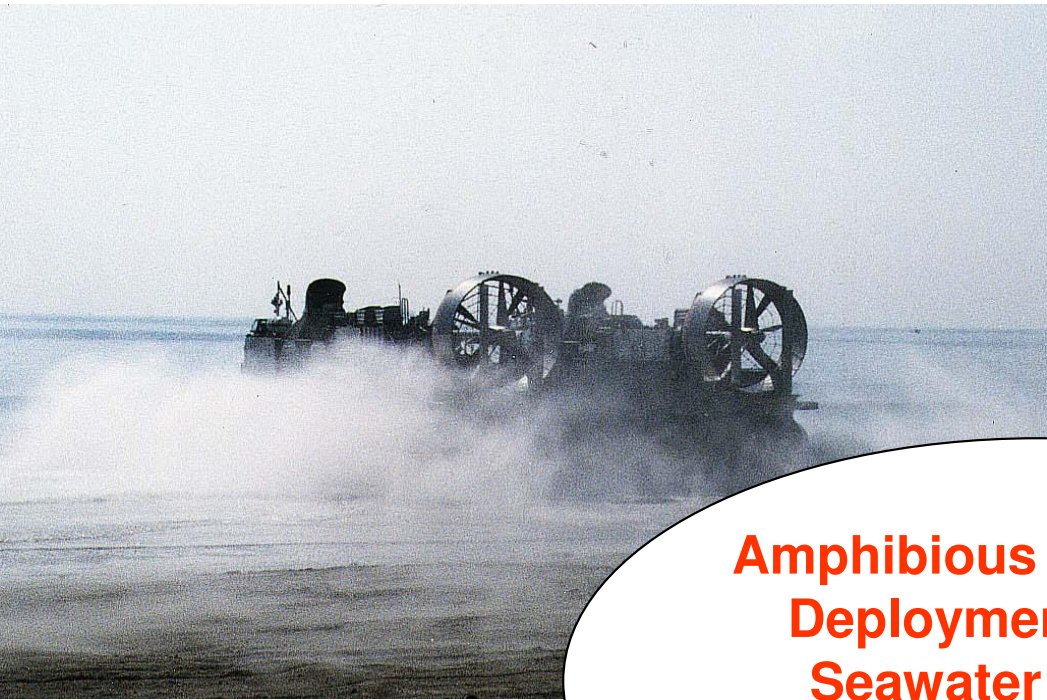
- **Impact of Corrosion on the Navy and Marine Corps**
- **Current Research Efforts**
- **Ideas for Sea Basing Enablers**

The Navy's Corrosion Environment

Sea water and Humid Atmosphere laden with
Airborne Salt
NOX and SOX
Condensation of Salt Water
Wet/Dry Cycle
High Temp. Oxidation, Hot corrosion
Molten Salt , Sulfidation



The Marine Corps Corrosion Environment



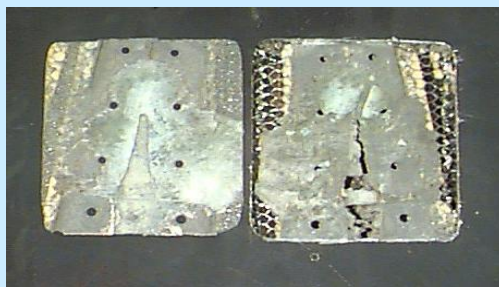
**Amphibious Operations
Deployment Abroad
Seawater Fording
Splash & Spray
Marine Atmosphere**





Big Problems with Corrosion

- **Materials vulnerable**



- **Inspection not always revealing**

- **Treatment often inadequate**

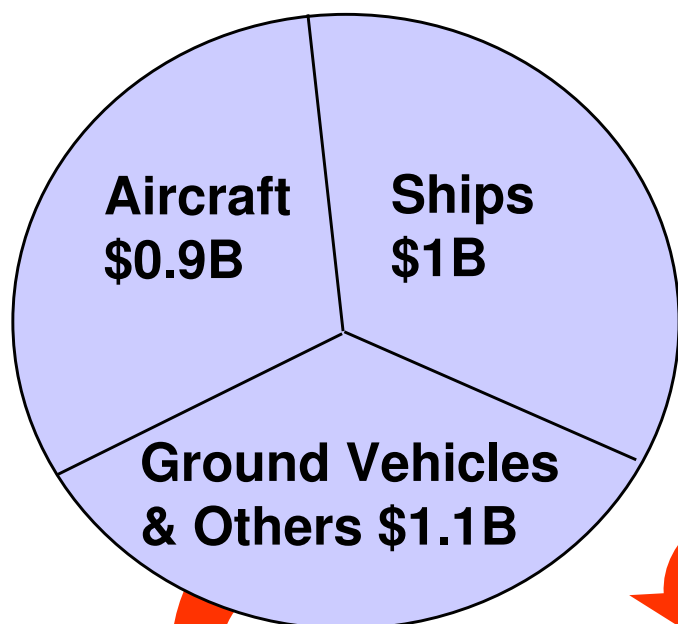


◀ **Significant maintenance required!**



Impact of Corrosion on the Navy

- Corrosion: Navy's No. 1 Maintenance Problem**



\$3B/Yr



Landing Gear – Stress Corrosion Cracks



Fasteners – Exfoliation

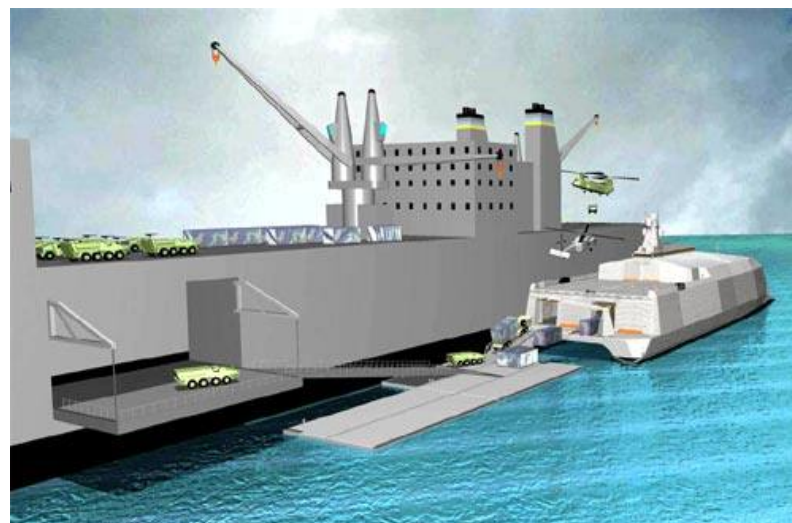


Aileron Spar & Bonded Structure Corr.



How we can enable Sea Basing

- ⟨ Better Materials
- ⟨ Better Coatings
- ⟨ Better inspection/detection methods
- ⟨ Better treatment methods and technologies



...A Big challenge
under these extreme conditions...





Single Ship Tank Coatings

Better coatings for ship tanks



- Quick turnaround time
- Longer service life
- Pier-side application

Sea Basing
Provide sustainment for
operations at sea/ashore





Modular Hybrid Pier

Modular, Floating, Relocatable, Double-Deck Pier



- Capability to reposition
- 100 yr pier life
- Double deck storage

Sea Basing

- Provide flexibility and mobility support for any platforms/sea borne assets
- Provide sustainment at sea/ashore
- Provide advanced base support





Summary

- **Corrosion Control and Prevention is a top operations and maintenance priority**
- **Corrosion research and development is helping:**
 - Ø **Reduce O&S corrosion cost to enable fleet recapitalization and modernization**
 - Ø **Extend service life of Navy assets beyond original design**
 - Ø **Increase readiness for present and future missions while reducing resource requirements**

Question:

How can we enable sea basing through corrosion control and prevention technologies?



Open Discussion Topics

Corrosion resistant alloys

Mini-depot

Shipboard repair technologies

**Sea-based
paint removal
technologies**



**Common parts
for sea based
platforms**



**Recycle of
rinse wash
water**



**Equipment
preservation**

**On-board
Corrosion office**

